

***Remarks***

Claims 1-3, 5-13, 22, 26-33, 35-37, and 45-56 are pending in the application, with claims 1, 22, 31, and 45 being the independent claims. Claims 4, 14-21, 23-25, 34, and 38-44 were previously cancelled without prejudice to or disclaimer of the subject matter therein. Based on the following remarks, Applicants respectfully request that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

***Rejections Under 35 U.S.C. § 103***

The Office Action states on page 2 that claims 1-3, 5-13, 22, 26-33, 35-37, and 45-56 are rejected under 35 § U.S.C. 103(a) as being allegedly unpatentable over U.S. Pat. No. 5,862,066 to Rossin *et al.* (hereinafter, "Rossin") in view of Marc Olano, "A Programmable Pipeline for Graphics Hardware," PhD Dissertation, Department of Computer Science, University of North Carolina, Chapel Hill, April 1998 (hereinafter, "Olano"). Applicants respectfully traverse this rejection.

With regard to independent claims 1 and 45, the Office Action states on page 3 that Rossin teaches the elements of claims 1 and 45, with the exception of "a floating point frame buffer" and "performing geometric calculations on a plurality of vertices of a primitive." Applicants agree that Rossin does not teach or suggest "a floating point frame buffer." However, Applicants respectfully disagree with the assertion made by the Examiner that "[g]eometry accelerator functions result in rendering data which is sent to the frame buffer subsystem for rasterization, and *thereby the rasterization process which operates using a*

*floating point format*" (emphasis added). Applicants agree that Rossin's "geometry accelerator functions" are performed in floating point format. (See Rossin, col. 2, lines 56-61.) However, Rossin states in col. 4, lines 35-39, that "[t]he rendering data is provided by geometry accelerator 110 along bus 112 to host interface 106 which re-formats the rendering data, *performs a floating point to fixed point conversion*, and provides such data along bus system 122 to frame buffer subsystem 104" (emphasis added). Since Rossin teaches that rasterization occurs in the frame buffer subsystem (see Rossin, col. 2, lines 59-61), Rossin's rasterization appears to be done in fixed point format, which conflicts with the assertion in the Office Action that Rossin teaches rasterization done in floating point format. As discussed below, Olano does not remedy the deficiencies of Rossin.

The Office Action states toward the bottom of page 3 that "Olano teaches a floating point frame buffer and rasterization process ... which operates on the floating point format." Applicants respectfully disagree with this assertion. Olano does not explicitly describe, anywhere in the document including the specific pages cited in the Office Action, whether the frame buffer is a floating point or fixed point frame buffer. Furthermore, Olano appears to teach use of an *emulated* floating point format, as described on pages 70-73 of Olano. According to page 69 of Olano, "[o]ur pixel processors do **not** support floating point in hardware, so every floating point operation is built from basic integer math operations" (emphasis added). Thus, Olano does not teach or suggest a floating point frame buffer. Applicants note that the PixelFlow system of Olano is noted explicitly in the specification as a prior art system that attempts to perform floating point operations through software emulation on fixed point hardware platforms. See the specification at page 4, line 12 through

page 5, line 11. Software emulation is carried out in software on a host. This is very different from using a floating point frame buffer.

For at least the reasons stated above, independent claims 1 and 45, and the claims that depend therefrom, are allowable. Thus, Applicants respectfully request that the rejections against claims 1 and 45, and the claims that depend therefrom, be reconsidered and withdrawn.

The Office Action states on page 6 that independent claim 22 is "analyzed as discussed with respect to claim 1." Thus, independent claim 22, and the claims that depend therefrom, are allowable for at least the reasons claim 1 is allowable. Therefore, Applicants respectfully request that the rejections against claim 22, and the claims that depend therefrom, be reconsidered and withdrawn.

The Office Action states on page 6 that Rossin and Olano teach the elements of independent claim 31 in a discussion similar to the discussion above for claims 1 and 45. Independent claim 31 recites features similar to the allowable features of claims 1 and 45 discussed above. Thus, independent claim 31, and the claims that depend therefrom, are allowable for at least the same reasons that claims 1 and 45 are allowable. Therefore, Applicants respectfully request that the rejections against claim 31, and the claims that depend therefrom, be reconsidered and withdrawn.

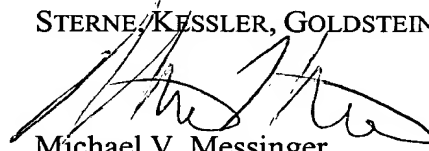
***Conclusion***

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all currently outstanding objections and rejections and that they be withdrawn. Applicants believe that a full and complete reply has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,

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